

Suicide among Veterans: Research, Models and Data

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ABSTRACT

Research among Vietnam veterans shows that PTSD and feelings of shame and guilt are risk factors for suicide. Many taboos are covering the subject of suicide. Data on suicide of Canadian peacekeepers seem to show that these peacekeepers are not at risk for suicide. However, Norwegian peacekeeping veterans are at risk for suicide as well as some risk groups of active duty military personnel. Models for explanation and prevention of suicide can identify risk factors and protective factors for suicide. Research and data on suicide have strong implications for military mental health care.

1.0 Introduction

Since 1990 80.000 of Netherlands military personnel have participated in peace-keeping and peace-enforcing operations of the United Nations and NATO all over the world. In 2001 a Canadian study on suicide among Canadian veterans was published (Wong et al, 2001), in which study the question was answered whether Canadian veterans are more likely to commit suicide than other people of their age. According to the Canadian authors, the answer is negative. However, in our meta-analysis we will comment on this study and we will try to answer this question in a different way (Meijer and Weerts, 2002). First of all, we will examine some studies on suicide among Vietnam-veterans. Then we will analyse the Canadian study. From these studies we will derive a model with factors that can explain why people commit suicide. Combined with three cases of suicide among Netherlands military personnel, we will also introduce a model that can be used for prevention of suicide. From this last model and other data on suicide among active duty military personnel we will derive some consequences for policy on care for military personnel as well as for veterans, military personnel that has been participating in operations and has ended active service.

1.1 Taboos on suicide

We have to remark that at least two strong taboos rest on the subject of suicide. The first taboo comes from death itself. From research on care for patients in hospitals it appeared that patients who were

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terminally ill, got fewer visits and had to wait longer for help, once they called for that help (Van der Meer, 1970, p.19). This author cites that in an American conference about care in psychiatric hospitals a conference-member shouted 'we do not even permit the dying person to say goodbye to us' (Van der Meer, 1970, p.20). The second taboo rests on suicide, the subject that is denied in every way out of so-called respect, shame or guilt (Bach, 1992, p.24). It is possible that this so-called respect comes from the belief that keeping this subject away from public awareness might decrease the risk of suicide, because you haven't heard or haven't thought of it. This very weak justification of the taboo is that it prevents suicide. In our opinion this prevention-effect of the taboo of not thinking, talking or studying suicide is a strong example of wishful thinking or denial. Especially shame and guilt are connected with the biblical curse on suicide, although in the bible there are many people who commit suicide and even the well-known Dutch theologist Kuitert states: 'suicide is a disaster, not a crime' (Bach, 1992, p. 30). Maybe a specific taboo on suicide among veterans may rise from the responsibility of the Department of Defence for the well being of their personnel and the chance of societal or individual claims, once it appears that the incidence of suicide among military personnel or veterans is high. Even the strongly felt individual responsibility for taking care of suicidal people, once it is too late, can foster this taboo. However, we conclude that only revelation of the taboo and close examination of the subject can lead to a better understanding of suicidal behaviour and the possibilities of prevention. Therefore, this paper aims to bring the subject out into the open.

2.0 Research on suicide among veterans

In 1975 the United States of America ended its war in Vietnam. More than 3 million American soldiers served in Vietnam for a tour of duty of one year most of the time (Shephard, 2001, p. 340). Of these soldiers approximately 57.000 were killed in action, a much larger number was wounded in action and an unknown number is still missing in action. Many had stayed physically impaired, due to their wounds. In the years after 1975 a still unknown number committed suicide, or was killed in violent deaths.

Box1

The aftermath of Vietnam first really claimed public attention on the 30th of April 1970, the day that Sergeant Johnson was shot.

In Vietnam, Sergeant Dwight Johnson had won the Medal of Honour, the United States' highest decoration for valour, for single-handed knocking out twenty enemy soldiers during a raid on his position. He had then served with distinction for another two years, but on returning home, found difficulty in readjusting to civilian life. He became convinced that the Army exploited all black soldiers and made no effort to help them afterwards: Army psychiatrists did not change this view. His frustration grew until he decided to deploy in his rundown Chicago neighbourhood skills he had shown in Vietnam. He was robbing a liquor store when he was killed...(Shephard, 2001, p.357).

Studies on the number of suicides raised several questions, because the results are quite contradictory to each other. In chronological order we will discuss several studies on the subject of suicide among veterans. We will also make some critical remarks on every study.

Pollock et al. (1990) describe how in United States' mass media repeatedly published numbers of more than 50.000 suicides among Vietnam veterans. This number almost equals the number of soldiers killed in action. Their research upon a sample of Vietnam-veterans leads to the conclusion that extrapolation of the

number of suicides reveals a number of suicides in the total population fewer than 9.000. This study dramatically shows how little data have been kept systematically on the incidence of suicide among veterans. In spite of all care for veterans this appears to be a weak area. Although the absolute estimated number of suicides is relatively small, they also conclude that Vietnam veterans are 25% more vulnerable for suicide than their peers of age and gender. In the end they contrast some remarkable findings on suicide. Most of the time, a depression precedes a suicide and, in general, these depressions occur among females two or three times as often as among males. However, the incidence of suicide among males is three times the incidence of suicides among females. We assume that these paradoxical findings can be explained when we take into account that the data on depressions are collected by questionnaires. From the female sex-stereotype, especially expressiveness, it can be expected that females express their depressed feelings in these questionnaires more accurately than males. The male sex-stereotype of competency can explain why so many attempts in suicide are successful, although this explanation is a rather cynical one.

Hendin and Pollinger-Haas (1991) conclude in their research on suicide among Vietnam veterans that especially feelings of guilt, coming from surviving beloved comrades as well as from killing defenceless people like prisoners of war, elderly people, women and children, are the main reason for suicide. Killing out of fear or rage has the most distinct relation with suicide. Attacking enemy villages by order, in which also civilians were killed, is less strongly related with guilt and suicide. They also found out that Vietnam veterans are between 11 to 65 % more likely to commit suicide than non-veterans. Their conclusion that feelings of guilt are the most powerful predictors of suicide resemble findings from research among veterans of the Second World War. The strong benefit of this study is that feelings of guilt appear to be an intermediating factor between having killed people and suicide: these feelings were not identified as such in former research. Especially in psychotherapy for veterans these feelings of guilt have to be worked through, in spite of shame and hesitation of mentioning them. In our opinion this shame and the importance of guilt need to be addressed, even though they are also likely to be a taboo.

Kramer et al (1992) include into the subject of suicide also life-threatening behaviours, like motor accidents, shootings alike the example in box 1 and overdoses of alcohol and drugs. They also include thoughts of death and dying into their research. Figure 1 shows their findings on thoughts on death and dying, their own death and thoughts of suicide among veterans in general, an outreach group of veterans and veterans in therapy.

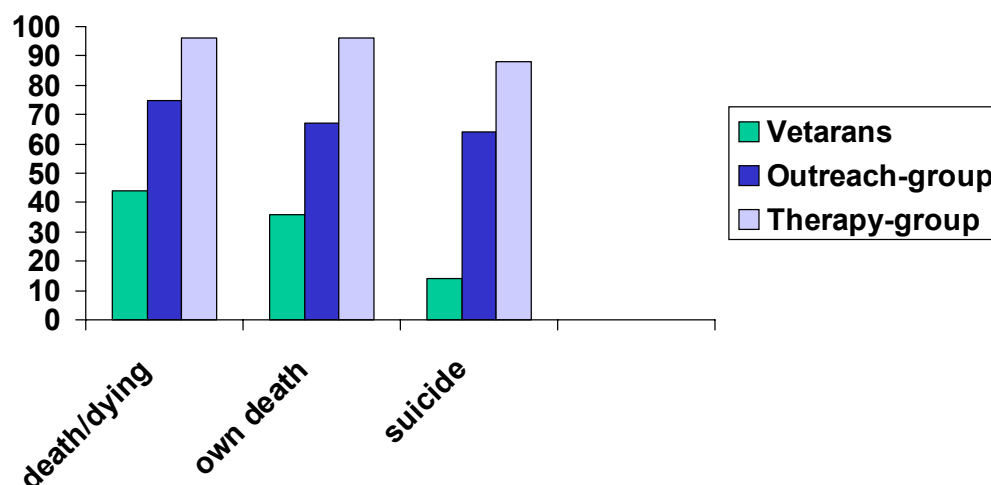


Figure 1. Thoughts on death and dying, the own death and thoughts on suicide among veterans, an outreach group of veterans and veterans in therapy (Kramer et al. 1992).

From figure 1, it appears that veterans in therapy think most of death and dying, one's own death and suicide. Remarkably, the outreach-group has the strongest psycho-social problems, like unemployment and divorces, as shown in figure 2.

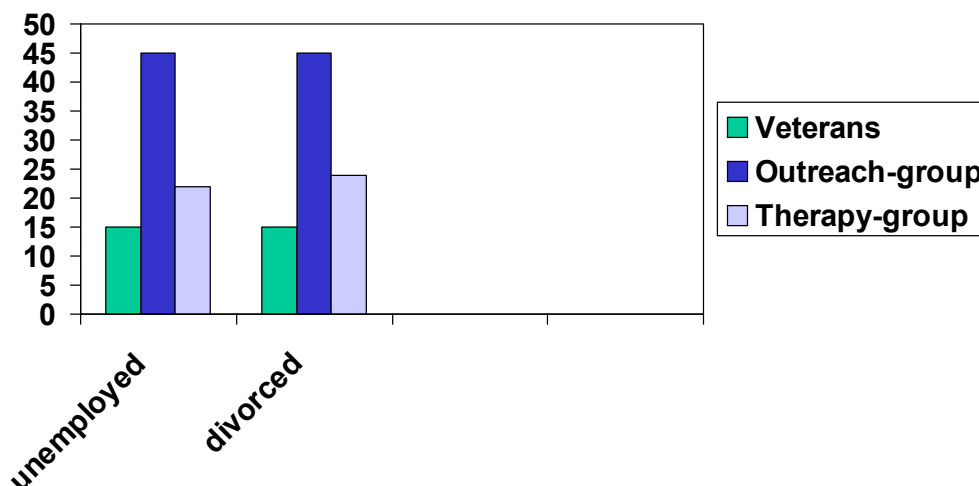


Figure 2. Percentages of people unemployed or divorced among veterans, an outreach group of veterans, and veterans in therapy (Kramer et al. 1992).

The authors do not offer an explanation for the differences between psychological and psycho-social problems among these groups. Probably, the fact that in therapy there is much focus on trauma, events in which death always plays an important role, can explain why the in group in therapy reports more thoughts on death, dying and suicide. The outreach-group can have more severe psycho-social problems, because in many cases partners or colleagues of veterans stimulate veterans to go in therapy. Once these partners have been lost by divorce or job-loss, veterans will not reach therapy. At the end of the day, both figures demonstrate very clearly that veterans in therapy and the outreach group have severe psychological and psycho-social problems.

Bullman and Kang (1994) also include in their study on suicide among veterans violent death by motor-accidents, shootings and overdoses. Further on they connect the PTSD-symptoms of avoidance and numbing with anomy, the utter lack of values and norms as described by the famous sociologist Emile Durkheim. Durkheim (1960) has introduced the concept of anomy to explain why people commit suicide. 'Inflation of values causes anomy and anomy causes suicide' is his conclusion. The authors notice that among Vietnam veterans, especially the veterans who have worked with Agent Orange, a very poisonous defoliant, are up to 4 or 6 times more likely to commit suicide than veterans who have not worked with Agent Orange. Within the group of Agent Orange veterans, a diagnosis of PTSD increased the chance of committing suicide with 71 %. There is a very accurate registration of Agent Orange veterans. The authors give no explanation for the differences in chance on suicide they found. Probably the feelings of guilt as described in the study of Hendin and Pollinger-Haas, coming forward from spreading the poison on defenceless people, including elderly people, women and children, can explain the increase in suicide among Agent Orange veterans. Also the fact that most of these veterans come from the Air Force, that brings personnel to work together for only very short times due to a frequent and individual rotation scheme, can explain these differences, as will be discussed later on in this paper.

Fontana and Rosenheck (1996) conclude from their research among 1000 veterans of the National Vietnam Readjustment Study (Kulka, 1990) that suicide among these veterans remains largely

unexplained, in spite of their research. However, they have not taken into account feelings of guilt, which appeared to be of major interest in explaining suicide. Important veterans-issues, like the homecoming of these veterans and their societal recognition have been remarkably well operationalised in this study. Lack of help in homecoming and lack of possibilities to talk about Vietnam correlate with Post Traumatic Stress Disorder (PTSD) .40 and .30 respectively. Depression and PTSD correlate with suicide between .20 and .34, which means that only a little more than 10 percent of the variance is being explained by these factors. However, the methods used in their data-analysis leave much room for discussion and we already mentioned that issues like feelings of guilt could explain much more about suicide.

Wang et al. (1996) describe the cyclical process of PTSD. In their model they connect with the stages of Horowitz, emotional outcry, denial, oscillation between reacting and numbing, acceptance and solution (Horowitz, 1978). In these stages, the oscillation between reacting and numbing seems to be most beneficial for reaching the final stage of solution (Epstein, 1989). Meijer and De Vries (2001) concluded on their help to veterans that especially very opposite reactions on very different aspects of a situation have to be discovered and worked through. For instance veterans who survived an air-raid in their Mitchell B-25 during the Second World War, do have to experience the relieve of survival, next to the fear of almost being killed and the grieve of losing so many comrades, who have been less lucky. Figure 3 shows this oscillating between aspects of events and the reactions of veterans, divided into observations, behaviour and feelings.

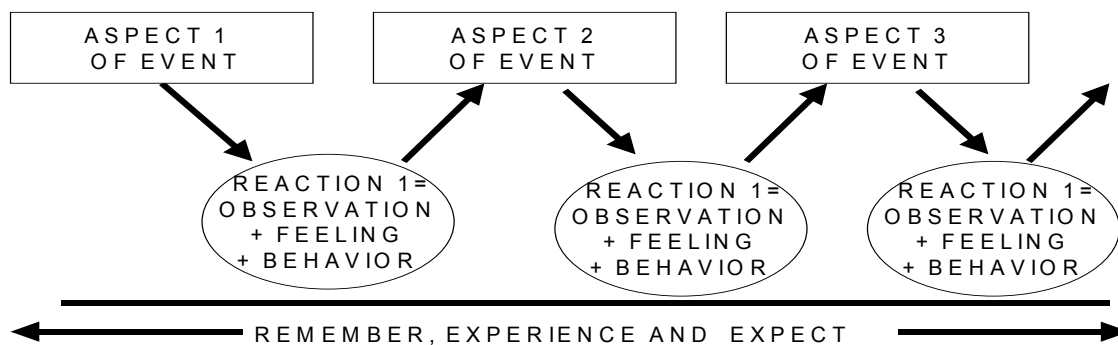


Figure 3. Oscillation between aspects of events and reactions, which consist of observations, feelings and behaviours.

Wang et al found out that in more long-term life-stages, adaptation to demands of every day life can be followed by a stage of surviving, in which general functioning is being impaired. In crossing the threshold to decompensation, veterans loose their jobs and or their relation with a partner because of divorce by behaviour that varies between utmost excitement (runs) and total isolation (bunker), in which every perspective of the future is being lost. The next and last stage is regrouping or getting lost. Veterans regard this last stage to be very similar to the stage after the battle in a combat zone, in which comrades are being found or lost. In addition to the immense feelings of relieve and grieve from their past experiences, also the run and bunker behaviours add strong feelings of guilt and shame from their present experiences. In that stage, for many veterans death by suicide or violent behaviour seems the only way out. We strongly agree with the authors that this cyclical character needs attention in both therapy and research. The authors also note that medication only offers a temporary solution and that the majority of Vietnam veterans has strong relational problems and up to 70 % of them has been divorced (Kulka et al, 1990). Therefore the authors invite researchers to do more research on long-term effects of PTSD.

Wong et al. (2001) conclude on their research among Canadian veterans of peacekeeping operations of the United Nations that these veterans are not more likely to commit suicide than other Canadians of the same age. In our opinion they ignore the fact that military personnel is selected upon physical and psychological health. Therefore their research hypothesis should predict less suicide among military personnel than among civilians. Upon this hypothesis their results support the conclusion that participation in peacekeeping operations increases the likeliness of suicide. It seems that in this study this 'healthy worker effect' has been ignored. They do conclude that the likeliness of suicide increases among air force personnel that have been participating in peacekeeping operations. As noted in the research upon air force personnel of the Agent Orange Administration this might be explained by the short time that air force personnel work together. This personnel is being rotated very frequently and often on an individual rotation-schedule. Further on there are indications that some of the Canadian military personnel participate in peacekeeping operations as often as possible, because of the rewards and bonuses upon their normal wages, that can be interpreted as risk-taking behaviour. These indications need more careful investigation.

Another source of evidence for higher risk on suicide and even cases of suicide comes from military personnel, when they are still acting in peacekeeping operations. Especially military personnel from third world countries seem to be vulnerable to this kind of suicide. In considering their situation we have to realise that the norm of 'rich helping poor', does not apply in their situation, especially when their wages are withheld from these soldiers, which seems to be the case quite often. Also worries about their own families, who are facing the same or even worse problems than the civilians they are supposed to help in their peacekeeping operations, can contribute to the anomy, as discussed before. It might be possible to consider these military personnel as displaced persons in more perspectives. These indications need more careful investigation as well.

Upon the studies we have discussed so far, we conclude that depression, PTSD and feelings of guilt are strong predictors of suicide. Feelings of guilt come from surviving, when beloved comrades have been killed in action or accidents, but also from killing defenceless people, prisoners of war, elderly people, women and children. Participation in peacekeeping operations, which can cause strong feelings of powerlessness and frustration, stemming from watching warfare or atrocities without the possibility of intervening and ending them, can also increase the likeliness of suicide. This possibility needs further investigation as well, but cannot be discussed in this paper. We will continue this paper with a model that summarises factors that explain suicide, and a model for prevention of suicide. Next, we will present and discuss data on suicide among military populations and implications of our analyses for military mental health care.

3.0 Models for explanation and prevention of suicide

All studies discussed before have in common that they try to predict suicide from depression and PTSD, which are strongly interrelated. Only one study adds feelings of guilt as another important predictor of suicide. We will connect these predictors with societal, social and individual factors and world-esteem and self-esteem as hidden constructs that connect these factors and predictors. World-esteem refers to the beliefs that the world is a right place to be, where rich care for poor, strong care for weak and goodness is being rewarded and badness is being punished. Self-esteem refers to the beliefs that the person himself is attractive, strong, honest and healthy. Feelings of guilt affect both world-esteem and self-esteem, and are being added to our model for bringing in these important feelings, as predictors of suicide, hidden in these constructs. We choose to do so because of the fact that almost every traumatic experience affects world-esteem and self-esteem. By experiencing trauma, people realise that the world is not a safe place to be, and that the own personality is not as powerful or attractive as one thought. In working through trauma, a rebuilding of world-esteem or self-esteem is possible, but in this paper we will focus on what happens without this working through. Based upon these predictors of suicide, societal, social and individual

factors, world-esteem and self-esteem that connect them, in figure 4 we present our model to explain suicide.

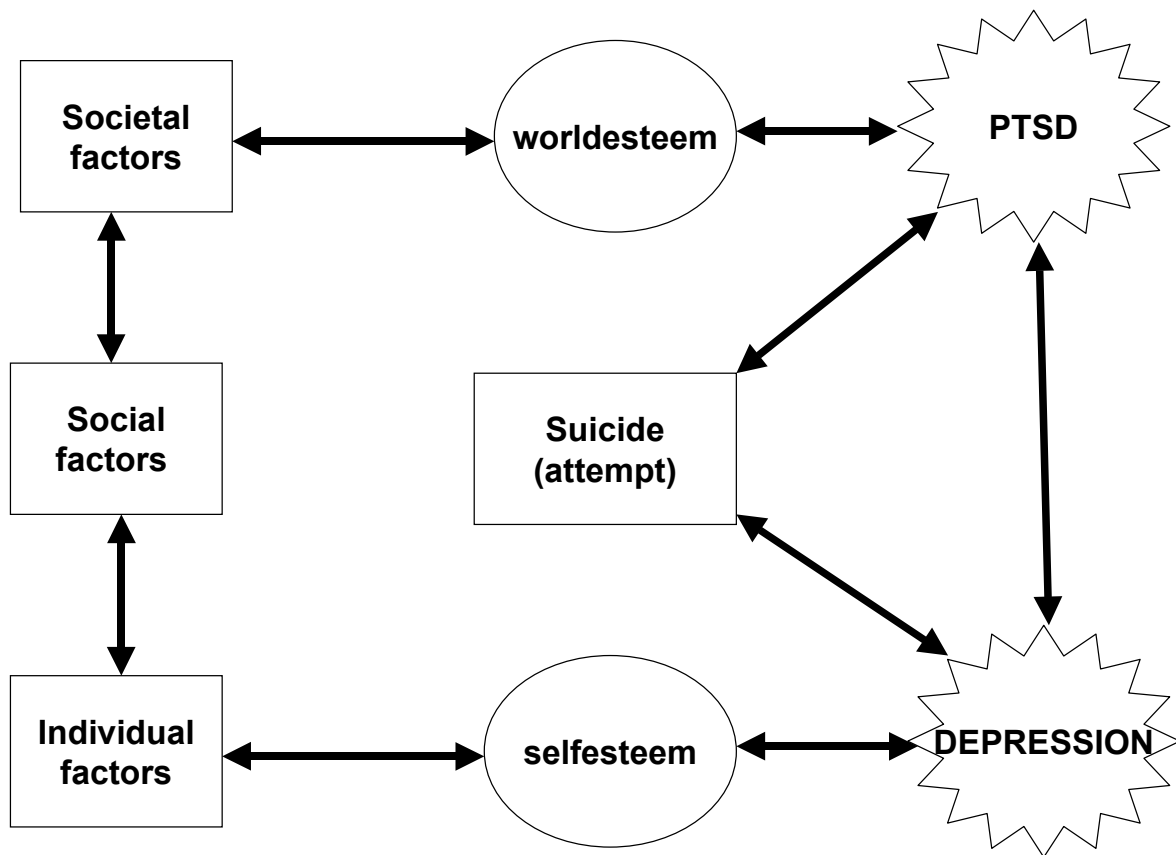


Figure 4. Model for explanation of suicide (attempt).

From figure 4 it appears that world-esteem, self-esteem, PTSD and depression are the most important predictors of suicide, which are being influenced by societal, social and individual factors. Societal factors refer to the recognition that veterans receive: the success of the operation they participated in is largely determining this recognition. Participation in a lost war most of the time means lack of recognition from society. Lots of studies on suicide among veterans regard the Vietnam War, which is an overt example of a lost war, with all its consequences for lack of recognition from society. Participation in peacekeeping operations has a similar risk of lacking societal recognition. Societal discussion about the pro's and con's of such operations endure from the very start of planning these operations and because it is an out of area operation, lack of support is to be expected. The success of peacekeeping missions is questionable most of the time. So peacekeeping operations might present their own risk factors in suicide (Mehlum1995, Mehlum 2001).

Referring to social factors, Vietnam veterans lacked social support by the discussion about the sense of this war that ripped families and friendships. In returning home, this social support lacked very overtly, because military were being rotated individually. Only after many years and depending on the first initiatives for reunions, some sort of social support emerged. Next to this phenomenon, the culture of the armed forces prohibits to share emotions or feelings of guilt: success seems to be the only thing that really counts. This brings the small group of people who have to share their emotions as an utter attempt to survive into the position of a minority, with all risks of discrimination. From the history of less successful wars it appears that it takes time to let this group grow. In Australia it took 12 years after the last

Australian soldier left Vietnam, before a mass demonstration of more than 25.000 Vietnam veterans marched through the streets of Sydney, bringing out an emotional outcry that had not be seen in many years before. In the years after, this march appeared to be the motor for massive recognition from society for the performance, grieve and pain of thousands of veterans.

On the individual level the real questions of veterans have to be addressed tacitly. These questions, often covering strong feelings of guilt, resemble questions of survivors of disaster: ‘why did I go there, why did I not leave earlier, why didn’t I die’, while the logic of outsiders cannot relate the presence of the victim to the occurrence of the disaster in any way.

In box 2 we describe three cases of suicide in the Netherlands armed forces. To protect the privacy of the deceased we have left out their names and changed their situations, without losing the bare essence of the cases.

Box 2. Suicide in the Netherlands armed forces.

A soldier from an ethnic minority fails to meet the terms of his basic training and is dismissed. Afterwards he tries to get into another part of the armed forces and has to wait for the new selection procedure. In his early youth his father left him, during basic training he had lost contact with his mother. While waiting for the selection procedure he runs out of money. In this crisis he calls for the help of the social work branch of the department of Defence. An intervention by a social worker leads to payment in advance of his salary, which he uses to buy a train-ticket to visit his girlfriend. This girlfriend lives with her mother on an apartment on the tenth floor. When he arrives he has to wait there for his girlfriend, who shows up a little later. After a strong dispute with his girlfriend he loses control of the situation and jumps down from the tenth floor...

After his initial military training, a soldier attends a technical course for heavy vehicle repair. This course is very individualistic: students do not meet for classical education at all. Therefore group-support in this course is minimal. One morning the school that offers this course is shattered by the news that on the evening before, the soldier jumped from the roof of his apartment on the eighth floor. On the rooftop the police, who investigated the suicide, found needles and remains of drugs. In the psychological autopsy it became clear that the mother of the soldier had died when he was only three years old. His stepmother lost contact when he entered the military. Within one year after the burial of the soldier, his father, who never had accepted the loss of his wife and had severe drinking problems, committed suicide by using an overdose of medicine and alcohol.

A soldier participates in peacekeeping missions of the United Nations twice in one and a half years time. During these operations he witnesses atrocities, in which women and children are being murdered. The rules of engagement prohibit interference in these terrible situations and in reporting these atrocities to his superiors, this information seems to get lost in the chain of command of the mission on stage. After the second mission the soldier turns out to have aggressive outbursts once and again. He also resigns from the armed forces. His girlfriend who supported him during both missions gets desperate and ends their relationship. Afterwards, the soldier dies in a single car accident. In the car his letter of goodbye is found ...

From the cases in box 2 it appears that suicide does happen among military personnel of the Netherlands armed forces. However, quantitative data to estimate the magnitude of this problem are still lacking or only available in a very limited way. However from a human perspective we note that every suicide is a disaster and has to be prevented whenever possible. Therefore, from these cases and from the model for predicting suicide in figure 4 we have constructed a model for prevention of suicide, as shown in figure 5.

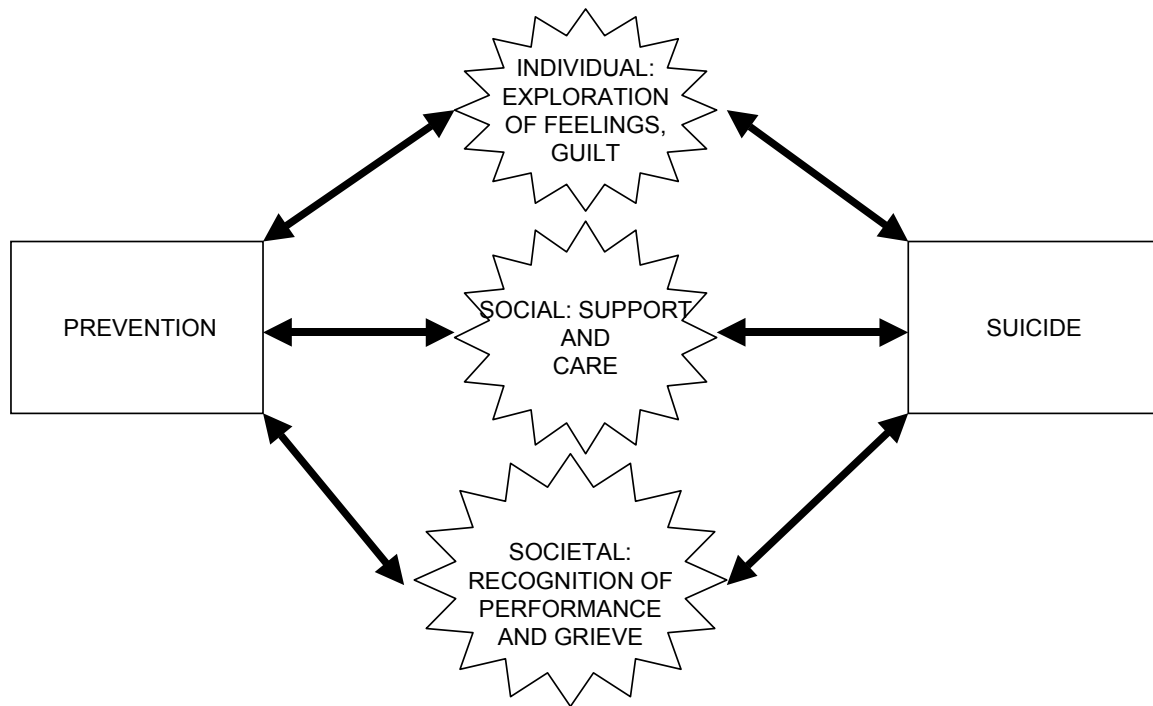


Figure 5. Model for prevention of suicide.

From figure 5 it appears that prevention of suicide on the individual level has to be realised by professional help. In helping veterans at this level, they learn to explore their own feelings in peeling off these feelings from every aspect of the events they experienced, as shown in figure 3. On the social level, most of the time there are enough sources of support and care: by parents, partners, friends and so on. However, when these sources are lacking, the likeliness of PTSD to emerge increases, and also the likeliness of suicide. In research among Gulf-war veterans the loss of a partner or friend turned out to be strongly related to the emergence of PTSD (Miller, 1991). So partners, friends and colleagues can play an important role in the prevention of PTSD and suicide among veterans.

The societal recognition of the performance and grieve of veterans is important in preventing suicide. In the case of a war that has been won or an operation that has met its goals, veterans get this recognition in a quite natural way. However, recognition for performances or grieve of veterans in a lost war or an unsuccessful operation is hard to get. As on the individual level, this kind of prevention of suicide on a societal level appears to be an important task for professionals in veterans-organisation. In the last section of this paper we will describe how these tasks can be incorporated in policy on care for personnel of the department of Defence as well as veterans-organisations.

4.0. Data on suicide of veterans and military personnel

4.1 Cases from the United States Armed Forces

Box 2. Self-harm and violence after deployment in the war on terrorism in Afghanistan.

On June 10 2002, Sergeant First Class Rigoberto N., a member of the Third Special Forces Group who had returned from Afghanistan two days earlier, shot his wife and then himself. He had requested leave from duty in Afghanistan to resolve personal problems.

On June 29 2002, the wife of Master Sergeant William W. of the 96th Civil Affairs Battalion, a Special Forces Unit, was strangled. Wright, who had been back from Afghanistan about a month, was charged with murder.

On July 19, Sergeant First Class Brandon F. shot and killed his wife and then himself, according to investigators. Floyd was identified as a member of the Delta Force, a crack anti-terrorism unit, whose existence is not officially acknowledged.

Washington Post, July 27, 2002, page A03.

4.2 Data from the Norwegian Unifil Study

More than 15.000 Norwegian veterans participated in the United Nations Interim Forces in Lebanon (UNIFIL) from 1978. Weisaeth (1994) reconstructed numbers of natural deaths and suicidal deaths among these veterans that are presented in table 1.

Table 1. Observed and expected number of deaths among Norwegian Unifil veterans up until 31st of December 1991 (Weisaeth 1992).

GROUP/ MORTALITY	Expected in Norwegian population	Observed in Norwegian Unifil veterans
Natural Deaths	113	69
Suicides	32	46
Total	145	115

From the numbers in table 1 Weisaeth concluded that the suicide rate among Norwegian UNIFIL veterans exceeds the suicide rate among Norwegian males of the same age by large. Weisaeth explains this high suicide rate among Norwegian UNIFIL veterans by the problems they have to face in working through their experiences of the deployment and in finding an appropriate place in Norwegian society after deployment. He also considers the possibility that active duty personnel might have an higher suicide rate than civilians as well, for instance because of a more risk-taking life style among military personnel in general. However, he has not studied this alternative explanation of the results in his research.

4.3. Data from the United States Armed Forces

In the spring of 1996, the United Air Force most senior leaders sensed that the details of far too many suicides were crossing their desks in daily reports of major events (Litts, 2001). In May of that year, the suicide of Admiral Jeremy Boorda, the top ranking officer of the United States Navy, caused them to take an even closer look. A team of military representatives and mental health professionals established several epidemiological baselines:

- In the first half of the 1990's, suicide has been responsible for 24 % of all deaths
- The rate of suicide had risen significantly for enlisted males in the years preceding 1996, though still about 40% less than the age, sex and race matched civilian population.
- Fewer than one third of the suicide victims had accessed Air Force mental health services before their deaths.

The team agreed on the following three themes in problems and solutions, involved in suicide:

- Airmen feared losing their jobs and avoided seeking professional help because of the stigma associated with mental health problems and their treatment.
- Many airmen perceived that commanders and supervisors routinely viewed mental health records, which reinforced the barriers due to the stigma.
- The Air Force was losing one of its defining qualities, a supportive interconnectedness.
- In the entire constellation of risk factors, problems with relationships, the law and finances played a part in an overwhelming majority of suicides.

Therefore the team developed a prevention program, which reinforces the next three protective factors:

- Individual coping skills
- Social support and interconnectedness
- Cultural norms that promote and protect responsible help seeking behaviour.

After the intervention programme, in which a dynamic cohort of more than 5 million military personnel participated, the suicide risk was reduced with 33 % (Knox et al, 2003). Also reductions in accidental deaths, homicide, and family violence were observed.

In October 2003 it appeared that among the 130.000 US soldiers in Iraq there had been 13 suicides in 7 months, which makes a suicide ratio of more than 17 per 100.000 per year. This ratio is 49 per cent higher than the suicide ratio for US military personnel in 1992-2001, which is 11.5 . For the Secretary of Defence of the United States this high ratio was the reason to send a team of mental health care professionals to Iraq to investigate the reasons for this high suicide ratio and prevent other suicides (Ritchie, 2003).

4.4 Data from the Dutch Armed Forces

From 1978 until 1985 more than 8000 Dutch military personnel served in UNIFIL. From 2001 we are preparing a comprehensive study on UNIFIL veterans. In order to analyse the data on suicide among Dutch UNIFIL veterans, we have been collecting the data of active duty personnel of the Netherlands Armed Forces. We received data on mortality of active duty personnel of the Royal Netherlands Navy and Army in June 2002. Figure 6 presents the data on mortality of military personnel of the Royal Netherlands Navy and the Royal Netherlands Marine Corps.

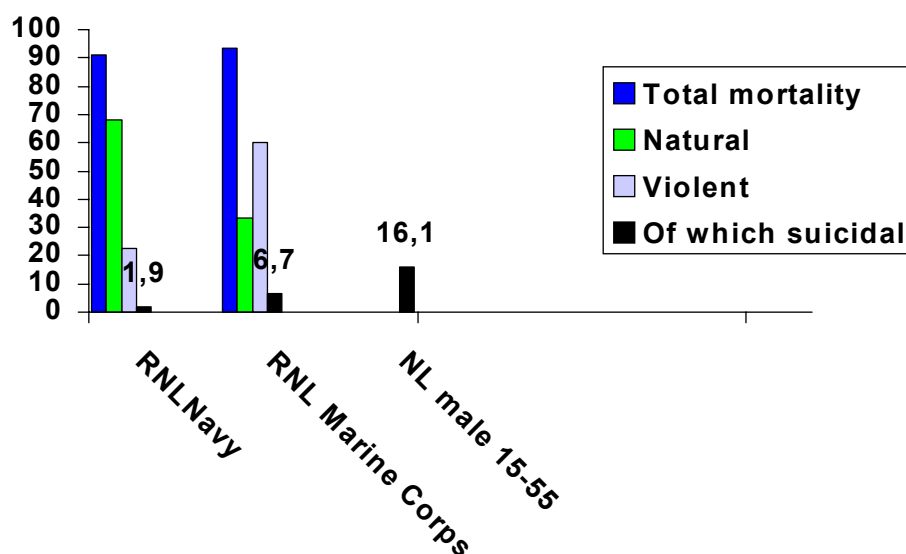


Figure 6. Mortality in active duty personnel of the Royal Netherlands Navy and the Royal Netherlands Marine Corps per 100.000 per year for 1995 to 1999, divided into natural deaths, violent deaths and suicidal deaths.

From figure 1 it appears that the overall mortality of military personnel in the RNL Navy is the same as the overall mortality of military personnel of the RNL Marine Corps. The ratio of natural deaths among military personnel of the RNL Navy is significantly higher than in the RNL Marine Corps (Chi-square=7.47, df=1, $p = .006$). Because overall mortality consists of natural deaths and violent deaths, the ratio of violent deaths is significantly higher in the Royal Netherlands Marine Corps. Probably, the average age of Marines is lower than the average age of Navy personnel, which can account for these significant differences.

From 1996 to 2002 the Royal Netherlands Army lost 335 people, civilians included, by natural and violent deaths. In military personnel only, there were 24 suicides in this period, which makes a ratio of 14.1 per 100.000 per year. According to the Central Bureau of Statistics in 1999 this ratio for men, aged 15-55, was 16.1. The ratio of suicide among Dutch females, aged 15-55 is considerably lower, 8.2 per 100.000. The gender-ratio of women in the Dutch Army is approximately 8.5 per cent, which makes the reference ratio of suicides 15.4, so the ratio among military personnel of the Royal Netherlands Army is lower than in the civilian population, matched by sex and age.

Almost half of the military personnel of the Royal Netherlands Army has a fixed-term contract (FTC) for two or four years. Between 1996 and 2002 15 persons of the FTC group passed away by suicide. Among this FTC group, the suicide ration was 17.9 per 100.000 per year. Military personnel from this group are honourably discharged at the average age of 30. The suicide ratio in the Dutch population, matched by this age and sex is 10.8. Compared to this ratio of 10.8, the suicide ratio among FTC military personnel of the Royal Netherlands Navy of 17.9 exceed this ratio by far.

Figure 7 shows the overall mortality of regular and FTC military personnel of the Royal Netherlands Army, divided in natural deaths and violent deaths, including suicides.

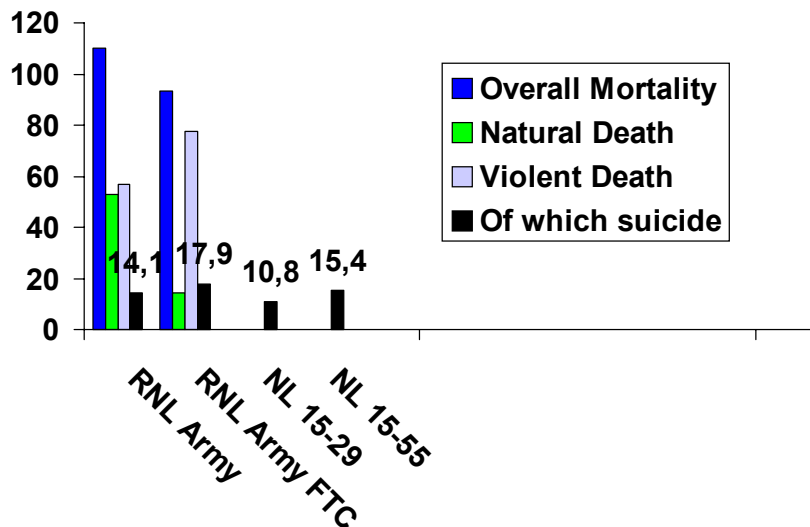


Figure 7. Mortality of military personnel of the Royal Netherlands Army, of Fixed Term Contracts, and of Dutch civilian populations, matched by sex and age from 1996 to 2002 per 100.000 per year.

From figure 7 it appears that natural deaths among all military personnel of the Royal Netherlands Army exceed the natural deaths among FTC personnel. The average age of TFC military personnel is expected to be considerably lower and might explain this difference. The suicide ratio of FTC military personnel seems to exceed the suicide ratio of Dutch civilian populations, matched by sex or age by far. Explanations for this higher ratio are still lacking, while low numbers and incidences have been criticised. There are other selection criteria for FTC personnel, and FTC personnel comes from broken families more often (Schoeman, 1995). Also difficulties in finding civilian jobs after a military career and the lack of perspective might explain this higher suicide ratio of FTC personnel, because unemployment is a risk factor for suicide (Clarke et al 2003).

Table 2 shows the expected and observed numbers of deaths in Dutch population and Royal Netherlands Army Fixed Term Contracts military personnel per 100.000 per year from 1996 to 2002.

Table 2. Mortality ratios in Dutch population of males, aged 18-29 years and Royal Netherlands Army Fixed Term Contracts military personnel per 100.000 per year. Source: Annual Statistics Central Bureau of Statistics 2003, p.26 and p.100.

GROUP/ MORTALITY	Ratio in Dutch population	Ratio in Royal Netherlands Army Fixed Term Contracts
Natural Deaths	35	14
Suicides	11	18
Total	46	32

From table 2 it appears that the ratio of natural deaths of FTC personnel is lower than in Dutch population of the same sex and age. This might be due to a 'healthy worker effect'. The suicide ratio in FTC

personnel is higher than in Dutch population of the same sex and age. Due to small numbers, the variance in suicide numbers per year is high. Smoothing the averaged numbers per year by averaging 0 suicides in 1997 and 4 suicides in 2000 reduces this variance. In that case, a Student-t-test shows a significant difference between observed and expected numbers of suicides ($t = 2.38$, $df=6$, $p=0.027$). A Chi-square test on the raw averaged numbers shows also a significant difference (Chi-square= 8.4, $df=1$, $p=.005$). Further research is needed to find valid explanations in order to make prevention programs work.

5.0 Implications of research, models and data for military mental health care

Research among Vietnam veterans and other veterans shows that PTSD is a risk factor for suicide (Drescher et al, 2003), as well as shame and guilt. The research among Canadian veterans of peacekeeping missions demonstrates suicide ratios in military populations are sometimes biased by the healthy worker effect. From the model as shown in figure 5 it appears that societal recognition of the performance and grieve of veterans can prevent suicide among military personnel on active duty and among veterans. Within the department of Defence, this societal recognition can be fostered by paying mass media attention to actions of military personnel who are serving in war or in peacekeeping operations. When this kind of societal recognition is financed by the department of Defence, this financial support itself is also a kind of recognition. This becomes even more apparent in the care for personnel, once they have left the organisation. Not only care for physical problems, but maybe even more for psychological problems, which are not always manifest immediately, and can be neglected so easily. The need for systematic registration of and research on self-harm, violence and suicide among veterans is an example of such care for psychological problems.

Veterans-organisations can foster this psychological care for veterans by conducting research on the specific problems veterans have to cope with. The research can add important information on the specialised help that veterans need. These organisations can foster societal recognition as well by spreading information among the mass media about the position of veterans in society or by organising regional or national gatherings of veterans. In these gatherings, veterans support each other socially by their mere attendance. Also partners, friends or colleagues can join these gatherings, and support the veterans on the social level in many ways. Education of veterans, partners, friends and colleagues is also an important activity in these kinds of gatherings.

Careful attention for military personnel or veterans who suffer from PTSD is a special issue in these gatherings, as well as in general personnel policy. Because of the fact that in most operations only a small percentage of the personnel is being affected by PTSD, these people are a minority by number and therefore at risk for discrimination. The military culture seems to forbid any weaknesses, especially on mental issues and easily leads to this discrimination, even in veterans-gatherings.

This risk of being discriminated exists also for veterans of small and almost unknown operations, regardless if they do or do not suffer from PTSD.

Last but not least prevention of suicide can be aimed at in professional help for individual veterans, especially when they receive therapy for PTSD. In this kind of help feelings of guilt need careful attention.

Several groups can be identified, that are at risk for suicide. Military personnel of the United States Air Force is such a group, and an impressive suicide prevention program for this group has been developed very effectively. Military personnel of the Royal Netherlands Army with a Fixed-Term Contract is another example of such a high risk group. Further research on this group is needed to determine risk factors and to develop an effective prevention program. The other way around, this kind of research and help also can provide important information on the incidence of suicide, especially when we realise that at this individual level every suicide is one too many. Feelings of guilt or failure among therapists can easily rebuild the taboo we have discussed before and therefore have to be addressed very carefully.

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